



Audit of Chase Palm Park Expansion Site Improvement Potential Using MP Rotators

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The use of MP Rotators in the lawns of the Chase Palm Park Expansion Site, which was installed with traditional spray heads, could result in a 50% savings on the cost of water applied to the lawns. Audits of the site before and after replacing existing spray nozzles with MP Rotators show an improvement in distribution uniformity, reduced irrigation water use, and dollar savings potentials for the site in excess of \$7,000.

On July 21, 2007, a representative zone of lawn was audited with the original spray nozzles. The lower quarter distribution uniformity was found to be 34%. The site was troubled with varying grade changes, a thick thatch layer, offshore breezes, and tilted or sunken pop-up sprinkler bodies. In a low spot, there was heavy runoff creating a puddle of standing water in which weeds were flourishing. On August 15, 2007, the spray nozzles were replaced with MP Rotators. No other changes were made to the site. On August 22, 2007, the site was again audited. The lower quarter distribution uniformity had doubled, to 56% (Table 1). All visible standing water due to runoff and uniformity issues was gone.

The effect that the improvement in distribution uniformity can have on the cost of irrigation for this site is dramatic. The spray nozzles had been watering at approximately 127% of ET_o (Table 2). At the current rates for municipal water (Table 3), the calculated cost of water for one year at 127% of ET is over \$14,000. The original manufacturer of the MP Rotator suggests that when a system is retrofitted, the run time should be doubled until the irrigation manager is able to properly judge the most effective run time for his site. In Table 1, you can see that doubling the run time results in MP Rotators watering at only 91% of ET. This seemingly small reduction in the amount of irrigation applied results in a 50% reduction in the overall cost of water for the site (Table 4).

In this example, this site could save over \$7,000 per year by simply changing only the spray nozzles in their lawns to the MP Rotator. Further savings would be realized with the adjustment of other factors affecting distribution uniformity, including head spacing, orientation, and scheduling. Park staff is currently implementing these changes.

Cost savings are not limited to existing sites. Properly designed projects, installed with MP Rotators, would not only have a reduced water use, but could also use smaller water meters, equaling even greater savings for the customer.

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Table 1: Comparison of Spray and MP Rotator Uniformity and Flow Rate

	Spray Nozzle	MP Rotator	Source
DULQ	33.69%	55.82%	Audit
Flow Rate	38 gpm	16 gpm	Flow Sensor

Table 2: Comparison of Irrigation Amount to ET Requirement

	Spray Nozzle	MP Rotator	Source
Date Range	7/11 – 7/19		Park Staff
Reference ET Total	1.71		CIMIS
Landscape Coefficient	0.65		Park Staff
ET for Site	1.11 in		Calculation
Total Run Time	51 minutes	102 minutes (2x spray run time)	Park Staff, Calculation
Avg. Precipitation Rate	1.52 in/hr	0.55 in/hr	Audit
Irrigation Volume	1.29 in	0.93 in	Calculation
% of ET Applied	127%	91%	Calculation

Table 3: Water Rates for City of Santa Barbara

City of Santa Barbara Rates for Water and Sewer Service Effective on bills dated on or after July 1, 2007	
Water is measured in units of one hundred cubic feet (hcf). One hcf equals 748 gallons. Allotments are monthly, except as indicated.	
Customer Class	Water Service Rates
Irrigation, Recreation/Parks/Schools	Annual allotment* of 1,404 hcf/acre @ \$2.09 Next 240 hcf/acre/year @ \$4.44 All other @ \$4.68

Source: <http://www.santabarbaraca.gov/Government/Departments/PW/Rates.htm>

Table 4: Cost Comparison of Irrigation for One Year on Entire Lawn Site

	Spray Nozzle	MP Rotator	Source
Average Yearly ET	44 in		CIMIS
Percent of ET Applied	127%	91%	Table 2
Applied Irrigation	56 in	40 in	Calculation
Total Lawn Area	2.5 ac		Park Staff
Volume of Water	5,100 HCF	3,600 HCF	Calculation
Cost for Irrigation	\$14,500	\$7,300	Calculation